

What is claimed is:

1. A purified DNA molecule having the sequence:

CLONING OF NOVEL HUMAN CHEMOATTRACTANT RECEPTOR

SEQ ID NO:1

2. A DNA molecule according to claim 1, which encodes a soluble human heptahelix receptor.
3. A DNA molecule according to claim 1 having the sequence: (I) in Fig. 1.
4. A DNA molecule according to claim 1 having the sequence: (II) in Fig. 1.

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5. A DNA molecule according to claim 1 having the sequence: (III) in Fig. 1.

6. A DNA molecule according to claim 1 having the sequence: (IV) in Fig. 1.

7. A DNA molecule according to claim 1 having the sequence: (V) in Fig. 1.

8. A DNA molecule according to claim 1 having the sequence: (VI) in Fig. 1.

9. A DNA molecule according to claim 1 having the sequence: (VII) in Fig. 1.

10. A DNA sequence according to claim 1 encoding the heptahelix receptor polypeptide expressed by a microorganism selected from the group consisting of yeast, bacteria, and eukaryotic cells.

11. A recombinant vector comprising an expression vector containing a DNA molecule as claimed in any one of claims 1 to 10.

12. A host cell transduced or transfected with a vector as claimed in claim 12.

13. A method of making heptahelix receptor, which comprises providing a host cell comprising an expression vector containing the DNA molecule of claim 1, and expressing said DNA to produce said receptor.

14. A method according to claim 16, which comprises recovering the heptahelix receptor.

15. A method according to claim 16, wherein the host cell is a bacterium or yeast.

16. A heptahelix receptor having the sequence:

1	M N T T S S A A P P S L G V E F I S L L A I I L L S V A L A V G L P G N S F V V	40
41	W S I L K R M Q K R S V T A L M V L N L A L A D L A V L L T A P E F L R F L A Q	80
81	G T W S F G L A G C R L C H Y V C G V S M Y A S V L L I T A M S L D R S L A V A	120
121	R P F V S Q K L R T K A M A R R V L A G I W V L S F L L A T P V L A Y R T V V P	160
161	W K T N M S L C F P R Y P S E G H R A F H L I F E A V T G F L L P F L A V V A S	200
201	Y S D I G R R L Q A R R F R R S R R T G R L V V L I I L T F A A F W L P Y H V V	240
241	N L A E A R R A L A G Q A A G L G L V G K R L S L A R N V L I A L A F L S S S V	280
281	N P V L Y A C A G G G L L R S A G V G F V A K L L E G T G S E A S S T R R G G S	320
321	L G Q T A R S G P A A L E P G P S E S L T A S S P L K L N E L N (SEQ ID NO:2)	352

17. A fragment of heptahelix receptor comprising up to about 100 consecutive amino acid residues in Fig. 1 and containing Asn-2.

18. A fragment of heptahelix receptor comprising up to about 100 consecutive amino acid residues in Fig. 1 and containing Asn-164.

19. A fragment of heptahelix receptor comprising up to about 200 consecutive amino acid residues in Fig. 1 and containing Cys-90 and Cys-168.

20. A fragment of heptahelix receptor selected from the group consisting of DNA molecules having the sequences (I), (II), (III), (IV), (V), (VI), and (VII) in Fig. 1.

21. A method of detecting Burkitt's lymphoma, wherein the method comprises providing disrupted human cells, contacting the

cells with DNA as claimed in claim 1, and detecting a hybrid containing said DNA.

22. An antibody that specifically recognizes the heptahelix receptor as claimed in claim 16.

23. The antibody as claimed in claim 22, which is a monoclonal antibody.

24. A method of detecting Burkitt's lymphoma, wherein the method comprises providing human cells, contacting the cells with the antibody as claimed in claim 22, and detecting immunological complex containing said antibody.

25. A method for lowering the level of active leukotriene B4 in a mammal in need thereof, which comprises administering to said mammal a leukotriene B4-lowering amount of a receptor comprising the sequence of amino acids of SEQ ID NO:2.

26. A method for lowering the level of active leukotriene B4 in a mammal having inflammation, which comprises administering to said mammal a leukotriene B4-lowering amount of a leukotriene B4 receptor comprising the sequence of amino acids of SEQ ID NO:2.

27. A method for lowering the level of active leukotriene B4 in a mammal having bronchoconstriction, which comprises administering to said mammal a leukotriene B4-lowering amount of a leukotriene B4 receptor comprising the sequence of amino acids of SEQ ID NO:2.

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28. A method for lowering the level of active leukotriene B₄ in a mammal having arthritis, which comprises administering to said mammal a leukotriene B₄-lowering amount of a leukotriene B₄ receptor comprising the sequence of amino acids of SEQ ID NO:2.

29. A method of treating a human to inhibit tissue injury accompanying inflammation resulting from leukocyte activity induced by LTB₄ produced in response to an inflammatory stimulus in the human, wherein the method comprises administering to said human a leukotriene B₄ receptor comprising the sequence of amino acids of SEQ ID NO:2 in an amount sufficient to inhibit activity of human leukotriene B₄ on polymorphonuclear leukocytes or monocytes in said human to thereby inhibit said tissue injury.

30. A method of treating a human to inhibit tissue injury accompanying inflammation resulting from leukocyte activity induced by LTB₄ produced in response to an inflammatory stimulus in the human, wherein the method comprises administering to said human a leukotriene B₄ receptor comprising the sequence of amino acids of SEQ ID NO:2 in an amount sufficient to modulate the inflammatory effect of leukotriene B₄ on polymorphonuclear leukocytes or monocytes by counteracting cell movement induced by LTB₄ in said human.

31. A method of treating a human to inhibit tissue injury accompanying inflammation resulting from leukocyte activity induced by LTB₄ produced in response to an inflammatory stimulus

in the human, wherein the method comprises administering to said human a leukotriene B₄ receptor comprising the sequence of amino acids of SEQ ID NO:2 in an amount sufficient to inhibit the stimulatory effect of leukotriene B4 on adherence of polymorphonuclear leukocytes or monocytes in said human to thereby inhibit said tissue injury.

32. A method of treating a human to inhibit tissue injury accompanying inflammation resulting from leukocyte activity induced by LTB₄ produced in response to an inflammatory stimulus in the human, wherein the method comprises administering to said human a leukotriene B₄ receptor comprising the sequence of amino acids of SEQ ID NO:2 in an amount sufficient to inhibit stimulatory effect of leukotriene B4 on oxidative burst of stimulated polymorphonuclear leukocytes in said human to thereby inhibit said tissue injury.

33. A method of treating a human to inhibit tissue injury accompanying inflammation resulting from leukocyte activity induced by LTB₄ produced in response to an inflammatory stimulus in the human, wherein the method comprises administering to said human a leukotriene B₄ receptor comprising the sequence of amino acids of SEQ ID NO:2 in an amount sufficient to inhibit the stimulatory effect of leukotriene B4 on degranulation of stimulated polymorphonuclear leukocytes in said human to thereby inhibit said tissue injury.

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34. A method of treating a human to inhibit tissue injury accompanying inflammation resulting from leukocyte activity induced by LTB₄ produced in response to an inflammatory stimulus in the human, wherein the method comprises administering to said human a leukotriene B₄ receptor comprising the sequence of amino acids of SEQ ID NO:2 in an amount sufficient to inhibit the effect of leukotriene B4 on oxidative burst or degranulation of stimulated neutrophils in said human to thereby inhibit said tissue injury.

35. A method for assaying a ligand or an antagonist or agonist for said ligand, wherein the method comprises:

- (A) providing a heptahelix receptor as claimed in claim 16 or a fragment thereof comprising a binding domain for the ligand, antagonist, or agonist;
- (B) incubating the receptor with a test sample suspected to contain the ligand, antagonist, or agonist; and
- (C) detecting binding between the receptor and the ligand, antagonist, or agonist.

36. A method according to claim 35, wherein the receptor is in an external cell membrane of a host cell transfected or transduced with DNA encoding the receptor.

37. A method according to claim 35, wherein binding is detected by intracellular calcium level in the host cell.